ASTRONOMY AND ASTROPHYSICS

A European Journal

Volume 114 1982

Published by Springer International on behalf of the Board of Directors

Astronomy and Astrophysics A European Journal

Board of Directors

Chairman: G. Contopoulos
(Greece)

R. A. J. Coutrez
(Belgique)

Vice Chairman: B. Hauck
(Switzerland)

H. Haupt
(Austria)

A. G. Hearn
(The Netherlands)

K. Hunger
(Germany, Federal Republic)

G. Larsson-Leander
(Sweden)

W. Priester
(Germany, Federal Republic)

A. Reiz
(Denmark)

E. Schatzman
(France)

G. Setti
(Italy)

J. L. Steinberg
(France)

L. Woltjer
(ESO)

Editors-in-Chief

J. Lequeux
Observatoire de Meudon
92190 Meudon (France)
Tel. 534-75-30 ext 368

M. Grewing
Astronomy and Astrophysics
Editorial Office
Keplerstrasse 17
7400 Tübingen
(Fed. Rep. of Germany)
Tel. (07071) 294982

Letter-Editor

S. R. Pottasch
Kapteyn Laboratorium
P. O. Box 800
9700 AV Groningen
(The Netherlands)
Tel. 050-116643

Editing Secretaries

Miss B. Perche
Mrs. M. Rougeot

Mrs. V. Berchtold

Mrs. E. Goss

The exclusive copyright © for all languages and countries, including the right for photomechanical and any other reproduction, also in microform, is vested in European Southern Observatory (ESO).
The use of registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

Springer-Verlag KG · Berlin · Heidelberg · New York
Printed in Germany
Printers: Brühlsche Universitätsdruckerei, Gießen

Volume 114 1982

Contents

Stellar Structure and Evolution

(LE) PS 74: The Discovery of a New SU UMa Type Dwarf Nova with High Orbital Inclination
Barwig, H., Hunger, K., Kudritzki, R.P., Vogt, N. L11

(LE) Comments on Radial White Dwarf Accretion
Kuijpers, J., Pringle, J.E. L4

(LE) The Nature of the 1E1145.1–6141 Optical Counterpart
Ilovaisky, S.A., Chevalier, C., Motch, C. L7

Gravitational Radiation from Collapsing Rotating Stellar Cores
Müller, E. 53

AN And: A Detached Eclipsing Binary System with an Am Primary Member
Giuricin, G., Mardirossian, F., Mezzetti, M. 74

On the Compatibility of Thermal and Hydrostatic Equilibrium in Thin Radiative Accretion Disks
Kippenhahn, R., Thomas, H.-C. 77

HR 2724 – A New Bright Variable in the δ Scuti Instability Strip
Baade, D., Stahl, O. 131

The Fastest Runaway Wolf-Rayet Star of Population I in the Galaxy, 209 BAC: Evidence for a Low Mass Companion
Moffat, A.F.J., Lamontagne, R., Seggewiss, W. 135

The Effect of Non-adiabatic Layers on the Vibrational Behaviour of Stars
Buchler, J.R., Regev, O. 188

The Binary System Sirius in the Context of Stellar Evolution
D'Antona, F. 289

Hydrodynamical Calculations of Accretion Disks in Close Binary Systems. I. Method
Hensler, G. 309

Hydrodynamical Calculations of Accretion Disks in Close Binary Systems. II. Models
Hensler, G. 319

UBV-polarimetry of the X-ray Binaries HD 77581 (4U 0900–40), HD 153919 (4U 1700–37) and of HD 152667
Östreicher, R., Schulte-Ladbeck, R. 328

The UV Spectrum of the Old Nova HR Del at Different Orbital Phases
Friedjung, M., Andrillat, Y., Puget, P. 351

(RN) Mass Transfer in a Low Mass Semidetached Binary, Taking into Consideration Nonequilibrium Effects
Hauschildt, M. 407

(RN) The Ultimate Fate of Wolf-Rayet Stars as Supernovae
Maeder, A., Lequeux, J. 409

Stellar Atmospheres

Photometric Properties of Ap Stars in the Geneva System
Hauck, B., North, P. 23

Observed and Computed UV Spectral Distribution of A and F Stars. Determination of T_e and log g
Malagnini, M.L., Faraggiana, R., Morossi, C., Crivellari, L. 170

(RN) Spectra of SN 1980*k* in NGC 6946
Barbieri, C., Bonoli, C., Cristiani, S. 216

Numerical Simulation of Radiative Transfer in Circumstellar Dust Shells. I. Spherical Shells
Lefèvre, J., Bergeat, J., Daniel, J.-Y. 341

Galactic Structure, Stellar Dynamics

Photographic Surface Photometry of the Milky Way. II. Surface Photometry in the Region of the Dark Cloud "Coalsack" in *U, B, V, R* (in German)
Seidensticker, K.J., Schmidt-Kaler, T., Schlosser, W. 60

Do Black Holes Exist at the Centres of Globular Clusters?
Gurzadyan, V.G. 71

Periodic Orbits in Nearly Axisymmetric Stellar Systems
Caranicolas, N., Barbanis, B. 360

Interstellar Matter

2–4 μm Spectroscopy of the Compact H II Region G 45.13+0.14 A
Krassner, J. 19

Formaldehyde Absorption Towards OH Sources
Forster, J.R., Boland, W. 109

3D Models for Self-gravitating, Rotating Magnetic Interstellar Clouds
Dorfi, E. 151

(RN) Detection and Study of Secondary Structures in Some Planetary Nebulae
Louise, R. 205

Pumping of H II/OH Masers: IR Line Overlaps and Collisional Excitation by H_2
Flower, D.R., Guilloteau, S. 238

Model Calculations of the Molecular Composition of Interstellar Grain Mantles
Tielens, A.G.G.M., Hagen, W. 245

Loss of CO^+ Ions by Reaction with H_2 in OMC-1
Huntress, W.T., Jr., Prasad, S.S., Kemper, P.R., Cates, R.D., Bowers, M.T. 275

The Visible and Ultraviolet Continuum from a Herbig-Haro Object in the Core of M 16 (NGC 6611)
Meaburn, J. 367

(RN) Discovery of a Large, High-excitation Planetary Nebula at $l=136°$, $b=+5°$
Heckathorn, J.N., Fesen, R.A., Gull, T.R. 414

Galaxies and Cosmology

(LE) Evolutionary Luminosity Functions of Extragalactic Sources Driven by Gravitational Power
Cavaliere, A., Giallongo, E., Messina, A., Vagnetti, F. L1

Optical Study of NGC 6946 (in French)
Peton, A. 1

The Galaxy NGC 1566: Distribution and Kinematics of the Ionized Gas
Comte, G., Duquennoy, A 7

Evolution of Rich Clusters of Galaxies
Roos, N., Aarseth, S.J. 41

Spectrophotometry of Wolf-Rayet Star Candidates in M 33
Wampler, E.J. 165

On the Interpretation of Optically Thin Synchrotron Spectra
Pineault, S. 177

Spectroscopic Observations of Thirteen Optically-selected QSOs in a Large Field Centred Around NGC 5334
Surdej, J., Swings, J.P., Arp, H.C., Barbier, R. 182

(RN) 21 cm Line Observations of cD Galaxies
Valentijn, E.A., Giovanelli, R. 208

(RN) The Bok and Tifft UBV Sequence in the Large Magellanic Cloud: Revised and Extended
Alcaino, G., Liller, W. 213

Massive Neutrino Halos in an Expanding Universe
Fabbri, R., Jantzen, R.T., Ruffini, R. 219

Pertubation of the Magnitude – Redshift Relation in an Inhomogeneous Relativistic Model. II. Correction to the Hubble Law Behind Clusters
Nottale, L. 261

How Well is Gas Mixed in Clusters of Galaxies?
Nepveu, M. 337

VLBI Observations of the Core Sources of a Sample of Spiral Galaxies
Hummel, E., Fanti, C., Parma, P., Schilizzi, R.T. 400

(RN) Galatic Neutrino Models
Rephaeli, Y. 405

The Sun

Spectral Line Transfer Effects in Lambdameter Measurements of Solar Short-period Oscillations
Deubner, F.-L., Durrant, C.J., Kaltenbacher, J. 85

Dynamics of the Eruptive Prominence of 6 May 1980 and Its Relationship to the Coronal Transient
Mein, N., Schmieder, B., Simon, G., Tandberg-Hanssen, E., Wu, S.T. 192

The Influence of Divergent Geometries on Stellar Winds
Kuin, N.P.M., Hearn, A.G. 303

Magnetic Field in Solar Prominences Measured with a New Spectrally Scanning Magnetograph
Kim, I.S., Koutchmy, S., Nikolsky, G.M., Stellmacher, G. 347

Terrestrial O_2 Lines Used as Wavelength References: Comparison of Measurements and Model Computations
Balthasar, H., Thiele, U., Wöhl, H. 357

On the Spectrum of Comet Bradfield 1980*t*
Cosmovici, C.B., Barbieri, C., Bonoli, C., Bortoletto, F., Hamzaoglu, E. 373

Planetary Systems

Dynamic Coma Models for Comet Bennet 1970 II
Cucchiaro, A., Malaise, D. 102

Celestial Mechanics and Astrometry

Improved Orbital Elements for Periodic Comet Schorr (1918 III)
de Vegt, C., Kohoutek, L., Marsden, B.G. 147

Three Characteristic Parameters of Orbits of Hilda-type Asteroids
Schubart, J. 200

Theory for the Motion of All the Planets. The VSOP82 Solution (in French)
Bretagnon, P. 278

Orientation of the JPL Ephemerides, DE 200/LE 200, to the Dynamical Equinox of J 2000
Standish, Jr., E.M. 297

A Comparative Spectral Analysis of the Earth's Rotation and the Solar Activity
Carta, F., Chlistovsky, F., Manara, A., Mazzoleni, F. 388

Physical Processes and Astrophysical Plasmas

Escape Probabilities, Mean Number of Scatterings and Net Radiative Bracket for Resonance Lines
Frisch, H. 119

Improvement of the Theories of Jupiter and Saturn by Harmonic Analysis (in French)
Simon, J.L., Francou, G. 125

(RN) Vlasov Equation?
Hénon, M. 211

The Influence of Buoyancy on the Stability of Jets
Achterberg, A. 233

Local Coupling of Surface MHD Waves with Kinetic Alfvén Waves in Jets
Bodo, G., Ferrari, A. 394

Instruments, Data Processing, and Numerical Methods

Experiences with the U.S. Naval Observatory Glass Circles
Rafferty, T.J., Klock, B.L. 95

A Stable Acousto-optical Spectrometer for Millimeter Radio Astronomy
Masson, C.R. 270

Abstracts of Articles Which Are Being Published in A. & A. Suppl. Ser. 50, No. 1

The Expansion Velocity Field Within the Planetary Nebulae NGC 1501 and NGC 6905
Sabbadin, F., Hamzaoglu, E. 419

Photoelectric *UBV*-photometry in the Large Magellanic Cloud (Text in German)
Issersted, J. 419

BR Muscae: A New Early-type Contact Binary
Clariá, J.J., Lapasset, E. 419

ADS 3230: Two Possible Solutions in the Computation of the Orbital Elements (Text in French)
Scardia, M. 419

Physical Studies of Asteroids. VII: The Unusual Rotation of M and CMEU Asteroids
Zappalà, V., Debehogne, H., Lagerkvist, C.-I., Rickman, H. 420

Effect of Different Sources of Variation of Latitude Data on Meridian Circle Catalogues
Rafferty, T.J. 420

Measurements of Double Stars Made in Nice. Orbits of Three Binary Stars (Text in French)
Couteau, P. 420

Positions of Asteroids Obtained During August and September 1981 with the GPO Telescope at ESO, Chile
Debehogne, H., Hahn, G., Lagerkvist, C.-I. 420

Fine Analysis of the Intermediate Helium-star CPD-46°3093
Groote, D., Kaufmann, J.P., Lange, A. 420

Positions of Selected Minor Planets (1980–1981)
De Sanctis, G., Ferreri, W., Zappalà, V. 421

RGU-three Colour Photometry of a Field near NGC 6171 (Text in German)
Wiedemann, D. 421

21-cm Line Profiles of 392 Spiral Galaxies
Bottinelli, L., Gouguenheim, L., Paturel, G. 421

Measures of Southern Double Stars in 1981
Wilson, R.H., Jr. 421

Two Photoelectric *UBVRI* Sequences in the Bar of the Small Magellanic Cloud
Vigneau, J., Azzopardi, M. 422

The Cycle-to-cycle Variability of Cygnus X-3
van der Klis, M., Bonnet-Bidaud, J.M. 422

Photometry in the Central Region of the Globular Cluster NGC 7099
Alcaino, G., Wamsteker, W. 422